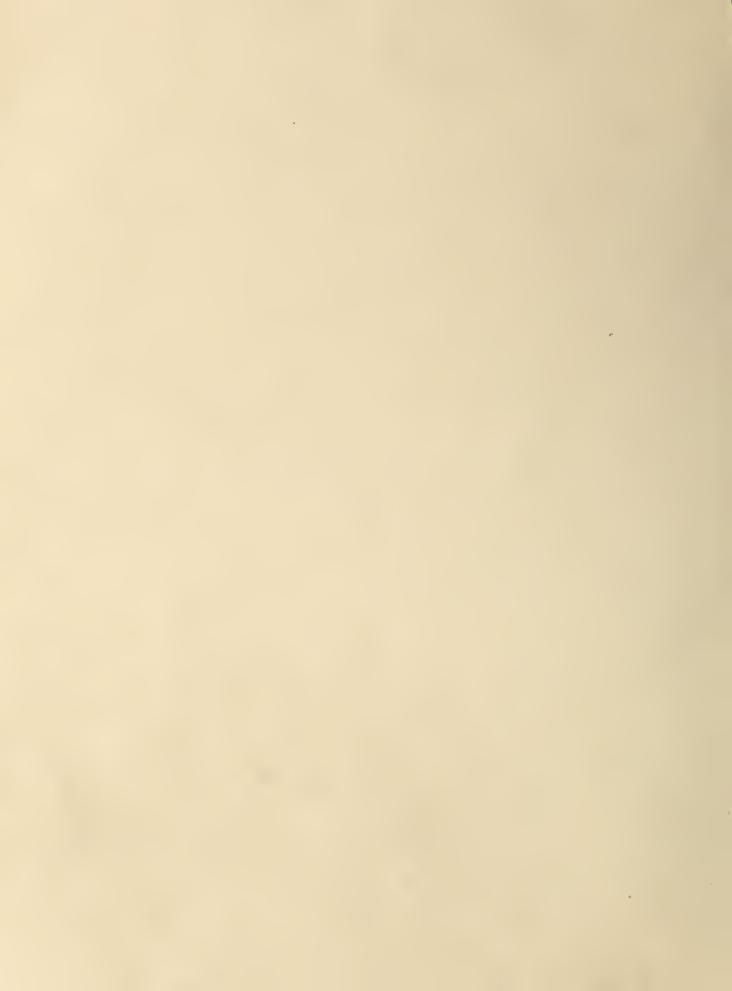
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FEDERAL - STATE - PRIVATE

# SNOW SURVEY and WATER SUPPLY FORECASTS for COLORADO and NEW MEXICO

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE and

COLORADO AGRICULTURAL EXPERIMENT STATION, STATE ENGINEER of COLORADO and STATE ENGINEER of NEW MEXICO

Data included in this report were obtained by the agencies named above in cooperation with the Bureau of Reclamation, U.S. Forest Service, National Park Service and other Federal, State, and private organizations.

FEB. 1, 1960

#### UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

#### PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
COLORADO ANO STATE OF UTAH	MONTHLY (JANMAY)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER AND OTHER AGENCIES
COLUMBIA AND STATES OF	MONTHLY (JANMAY)	BOISE, IOAHO	IDAHO STATE RECLAMATION ENGINEER
UPPER MISSOURI AND STATEOF MONTANA	. MONTHLY (FEBMAY)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
WEST-WIDE	OCT. 1, APR. 1, MAY 1	PORTLAND. OREGON	ALL COOPERATORS
STATES			
ARIZONA	SEMI-MONTHLY(JAN.15 - APR.1)	. PHOENIX. ARIZONA	SALT R. VALLEY WATER USERS ASSOCIATION ARIZ. AGR. EXP. STATION
COLORADO ANO NEW MEXICO	MONTHLY (FEBMAY)	FORT COLLINS, COLORADO _	COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER
NEVADA	MONTHLY (FEBAPR.)	- RENO. NEVADA	NEVAGA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JANMAY)		ORE. AGR. EXP. STATION OREGON STATE ENGINEER
WASHINGTON	. MONTHLY (FEBMAY)	SPOKANE, WASHINGTON	WASH. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB JUNE)	CASPER. WYOMING	WYOMING STATE ENGINEER
Copies of these various	reports may be secured	from: Head, Water Suppl Soil Conservation 209 S. W. Fifth A	
	PUBLISHED BY 01	THER AGENCIES	
REPORT	ISSUED	AG	SENCY
BRITISH COLUMBIA	MONTHLY (FEBJUNE)		R RIGHTS BR., DEPT, OF LANOS IAMENT BLOG., VICTORIA, B.C.,
CALIFORNIA	MONTHLY (FEBMAY)	CALIFORNIA DEPT. 0	F WATER RESOURCES, SACRAMENTO

### FEDERAL-STATE COOPERATIVE

#### SNOW SURVEYS AND WATER SUPPLY FORECASTS

for

COLORADO RIVER, PLATTE RIVER ARKANSAS RIVER AND RIO GRANDE DRAINAGE BASINS

Issued

February 1, 1960

Report Prepared By
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United States Department of Agriculture
Soil Conservation Service
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Colorado Agricultural Experiment Station
Fort Collins, Colorado
and
State Engineer of Colorado
Denver, Colorado
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Sherman S. Wheeler, Director Colorado Agricultural Experiment Station J. E. Whitten State Engineer State of Colorado

S. E. Reynolds State Engineer State of New Mexico

General Series Paper No. 717 Colorado Agricultural Experiment Station

# WATER SUPPLY OUTLOOK COLORADO, RIO GRANDE, PLATTE AND ARKANSAS DRAINAGE BASINS

February 1, 1960

WATER SUPPLY OUTLOOK AS OF FEBRUARY 1 IS LESS THAN AVERAGE IN MOST AREAS OF COLORADO EXCEPT THE RIO GRANDE AND SAN JUAN WATERSHEDS. THESE TWO WATERSHEDS ARE WELL ABOVE NORMAL. ALL WATERSHEDS IN NEW MEXICO ARE NORMAL OR ABOVE. THE SNOWFALL IN THE NORTHERN HALF OF COLORADO IS ONLY ABOUT 75% OF THE 15 YEAR NORMAL. HEAVY SNOWFALL DURING THE NEXT THREE MONTHS IS NECESSARY TO INSURE AN ADEQUATE WATER SUPPLY IN THIS AREA.

RIO GRANDE AND ITS TRIBUTARIES IN NEW MEXICO HAVE RECEIVED ABOVE AVERAGE SNOWFALL THIS YEAR AND IF THESE CONDITIONS CONTINUE, SHOULD HAVE A GOOD WATER YEAR.

COLORADO. The northern half of the state may have some shortages of water unless the next few months produce above normal snowfall. Snowpack in this area ranges from 65% on the eastern slope to 75% on the western slope. Snowpack on the southern half is from slightly below normal on the Arkansas to as much as 150% of average on the Rio Grande. Storage on larger reservoirs is similar to last year except John Martin reservoir which was emptied during the irrigation season. Water supply on the lower Arkansas could be in short supply because of this.

Early season snowfall left the valley soil moisture in good condition throughout the state. High elevation soils are equally good. This could increase the summer runoff above what the snowpack would indicate.

NEW MEXICO. The water supply outlook for the Rio Grande and its tributaries in Colorado and New Mexico is good as of February 1. The snowpack at high elevation is excellent, in some areas in Colorado as much as 150% of the 1943-57 normals.

Snowpack along Continental Divide in Colorado and Northern New Mexico ranges from 125% of normal in Colorado to just above average in New Mexico. Early season precipitation left the soil in excellent condition in both mountains and valleys.

The April-September snowmelt runoff of Rio Grande at Otowi is expected to be about 130% of normal. Snowpack on headwaters of Rio Chama and Pecos River is above average and an adequate water supply can be expected.

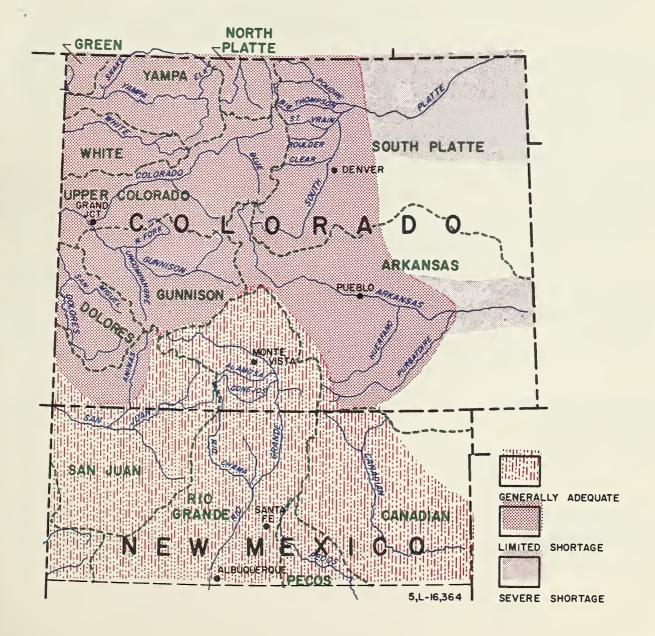
Some of the water stored in Elephant Butte and Caballo Reservoirs during the heavy runoff years of 1957 and 1958 was used during last season. The storage in these two reservoirs is only about 60% of last year and somewhat less than normal. The expected high runoff should help to maintain storage in these reservoirs.

Storage on the Tucumcari Project is just slightly less than last year at this time but still 125% of normal. Water supply outlook for this area is good.

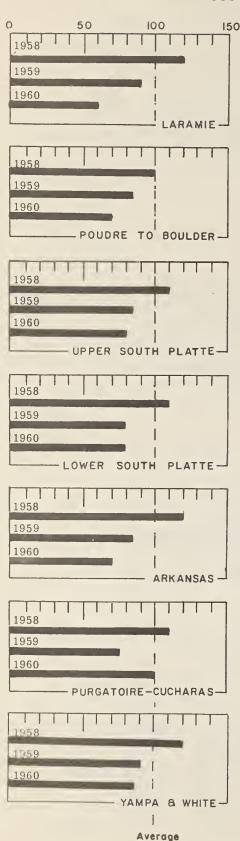
# WATER SUPPLY OUTLOOK

THE MAP ON THIS PAGE INDICATES THE MOST PROBABLE WATER SUPPLY AS OF THE DATE OF THIS REPORT. ESTIMATES ASSUME AVERAGE CONDITIONS OF SNOW FALL, PRECIPITATION AND OTHER FACTORS FROM THIS DATE TO THE END OF THE FORECAST PERIOD. AS THE SEASON PROGRESSES ACCURACY OF ESTIMATES IMPROVE. IN ADDITION TO EXPECTED STREAMFLOW, RESERVOIR STORAGE, SOIL MOISTURE IN IRRIGATED AREAS, AND OTHER FACTORS ARE CONSIDERED IN ESTIMATING WATER SUPPLY. ESTIMATES APPLY TO IRRIGATED AREAS ALONG THE MAIN STREAMS AND MAY NOT INDICATE CONDITIONS ON SMALL TRIBUTARIES.

FEBRUARY 1, 1960



# WATER SUPPLY OUTLOOK



THE BAR CHARTS ON THIS AND THE NEXT PAGE REPRESENT GRAPHICALLY THE MOST PROBABLE WATER SUPPLY OUTLOOK FOR 1960 AS COMPARED TO 1958 AND 1959. STREAMFLOW AND OTHER FACTORS FOR 1959 ARE PARTIALLY ESTIMATED AS FULL DATA ON WATER SUPPLY CONDITIONS ARE NOT YET AVAILABLE. ESTIMATES OF PAST CONDITIONS AND FOR ECASTS HAVE BEEN MADE BY THE AUTHORS OF THIS REPORT IN CONSULTATION WITH WATER OFFICIALS.

LARAMIE: Snow cover on the Laramie watershed is only about 60% of normal. However, there should be only limited shortages in Colorado. Soil moisture is above average at the higher elevations as well as in the valleys.

POUDRE TO BOULDER: Water supply outlook in the area bounded by the Cache La Poudre River and Boulder Creek is much poorer than last year at this time. The snow pack ranges from 55% of normal on the St. Vrain to 68% on Big Thompson. Soil moisture conditions are reported as good in most areas. January temperatures were above normal, while snowfall was extremely light. Reservoir storage in the smaller irrigation reservoirs is similar to last year and slightly above normal. In addition to natural streamflow there is a total of 150,000 acre feet in Horsetooth Reservoir and Carter Lakes and about 250,000 in Granby Reservoir for the Big Thompson Project. The Big Thompson Project is above its normal storage.

UPPER SOUTH PLATTE: Snowpack at the higher elevations is above normal, but the lower areas are lacking in snow. This is the case in most places in the state. Municipal reservoirs of the City of Denver are slightly above normal and similar to a year ago. Soil moisture conditions are reported as good.

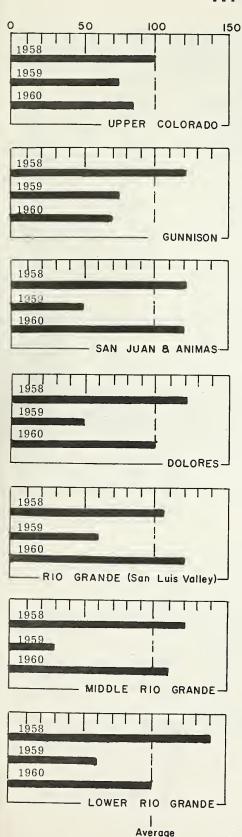
LOWER SOUTH PLATTE: Water supply outlook for lower South Platte is not as good as last year and limited shortages may exist. Reservoir storage is better than last year and slightly above normal. Soil moisture conditions are reported as good.

ARKANSAS: The coming irrigation season could be one of shortages. The snowpack is only about 80% of normal, but almost up to last year. Mountain soils are wetter than usual and valley soils are reported as good in most areas. Reservoir storage is less than normal and considerably less than last year at this time. Last year at the date of this report, John Martin Reservoir contained 245,000 acre feet. This year the storage is only about 12,000. The upper areas of the Arkansas should have near normal water supply, while the lower areas will experience a shortage.

PURGATOIRE-CUCHARAS: The flow of the Huerfano, Cucharas and Purgatoire Rivers should be normal or slightly above based on present snow measurements. Soil moisture conditions are reported as good in the valley.

YAMPA-WHITE: The snow pack is almost identical to last year but only about 70% of normal. Soil moisture at the higher elevations is reported as good, but only fair at lower elevations. Water supply is expected to be adequate to meet the demands this year.

# WATER SUPPLY OUTLOOK



UPPER COLORADO: Snowpack on the headwaters is only about 75% of normal. This includes the main stem and Roaring Fork. Summer streamflow will be less than normal. Soil moisture is reported as good.

GUNNISON: Below normal snowpack exists on the headwaters as well as on the tributaries from the Grand Mesa. Irrigated areas along the Gunnison may have some water shortages this season. Soil moisture is good. Storage in Taylor Park reservoir is 70% of the 1943-57 average.

SAN JUAN-ANIMAS: The headwaters of the San Juan has one of the highest snowpacks in the state. Wolf Creek Summit snow course is 175% of normal. The lower snow on this watershed is not quite as good but still well above normal. The snowpack on the Animas is just about normal at this date. Soil moisture on both watersheds is good.

DOLORES: The water supply outlook is greatly improved over last year, but still slightly below normal. Probably only very limited shortages will exist. Soil moisture is good.

RIO GRANDE (San Luis Valley). The outlook for the San Luis Valley is much better than last year. Some of the readings are comparable to the 1957 water year. There should be no shortage of water in the San Luis Valley if the snowfall remains normal or above for the remainder of the year. Soil moisture is reported good. Small irrigation reservoirs are 88% of their usual storage.

MIDDLE RIO GRANDE (New Mexico): Normal or above snowpack exists on the Rio Grande in New Mexico. Probably all tributaries and main stem of Rio Grande will flow normal or above for the April-March period. The outlook is must improved over last year but not substantially above normal. Storage is less than normal. Soil moisture is reported as good.

LOWER RIO GRANDE: Storage in the larger reservoirs is much less than last year and only about 85% of normal. Flow of the Rio Grande should be above normal and, if supplemental water is used, should be adequate for most irrigation requirements. Soil moisture is reported as good.

FOR DETAILS ON WATER SUPPLY CONDITIONS ON THE COLORADO RIVER DRAINAGE IN UTAH AND ARIZONA, NOT LISTED OR DISCUSSED IN THIS REPORT, REFERENCE SHOULD BE MADE TO THE STATE SNOW REPORTS FOR UTAH (see inside cover).

# COOPERATIVE SNOW SURVEYS SUMMARY OF SNOW MEASUREMENTS

February 1, 1960

WATERSHEDS	No. of Courses Averaged	Years of Record	Water C as perce 1960 A	ent of		No. of Courses Averaged	Years of Record	Water Conte as percent of 1960 Avg.	
ARKANSAS RIVEF	<b>}</b>				PLATTE RIVER				
Arkansas River	8	5-24	96	83	Laramie River	1	16	40	51
					South Platte River	** 2	10-21	84	93
COLORADO RIVE	R				Poudre River	7	9-21	53	60
Colorado River*	24	8-23	83	75	Big Thompson Rive	er 4	9-21	69	68
Roaring Fork	2	18-24	115	75	St. Vrain River	3	10-22	51	55
Plateau Creek	2	15-23	141	85	Boulder Creek	1	21	38	59
Yampa River	5	8-24	66	65	Clear Creek	5	8-20	106	97
White River	2	20-24	71	71					
Gunnison River	8	11-24	129	75	RIO GRANDE				
Dolores River	4	11-21	227	88	Rio Grande (Colo.)	5	9-20	319	130
San Juan River	5	9-20	360	124	Rio Grande (N. M.)	7	8-21	193	142
Animas River	4	9-23	232	93	Conejos River	1	21	148	98
					Chama River	3	18-21	760	105
					Pecos River	3	10-21	265	203
					Canadian River	2	19-21	169	123
					Alamosa River	2	15-20	353	120
*Above Glenwood	Springs				** Above Denver				

#### AVAILABLE SOIL MOISTURE

# February 1, 1960

DRAINAGE BASIN AND	Date	SOIL		TURE N INC		TENT	Years	DRAINAGE BASIN AND	Date	SOIL		TURE INCH		TENT	Years
STATION	Date	Can				Avg.	Record	STATION	Date	Can				A	Recor
STATION		Сар.	1900	1959	1936	Avg.	Record	STATION		Сар.	1960	1939	1936	Avg.	necor
NORTH PLATTE								UPPER COLORADO							
Muddy Pass		8.0	5.0	0.2	4.5	2.3	6	Vail		8.0	5.2	0.6	5.4	2.6	6
Willow Pass		7.0	7.0	0.7	6.9	3.8	6	Ranch Creek		7.0	5.7	4.3	5.8	4.4	4
								Hairpin		8.0	1.0	0.5	6.4	2.0	4
SOUTH PLATTE								Vasquez Siphon		7.0		3.8	5.9	3.7	4
Feather	6	3.0	4.5	0.1	1.5	1.2	8	Gore		7.0	2.1	0.1	1.9	1.2	4
Laramie Road	7	7.0	5.3	0.7	3.4	2.3	8	Blue River		7.0	4.4	0.4	6.8	2.9	4
Beaver Dam	6	3.0	4.6	0.3	1.0	1.6	8								
Two Mile	8	3.0	5.0	0.8	5.3	3.0	8	SAN JUAN							
Guard Station	7	7.0	2.2	0.2	0.8	1.1	8	Mineral Creek		7.0	5.6	3.1	6.5	5.0	3
Alpine Camp	7	7.0	5.8	0.3	1.4	1.5	8	Molas Lake		7.0	3.2	2.5	6.7	4.1	3
Hoop Creek	6	3.0	4.4	2.6	3.1	2.2	7	Cascade		7. C	5.7	4.7	7.0	5.8	3
Alma	7	7.0	5.0	0.3	4.4	2.5	4								
Kenosha Pass	7	7.0	2.8	0.2	6.3	2.5	4	GUNNISON							
Clear Creek	7	7.0	3.5	. 9		2.2	2	King		8.0	5.9	7.3	7.2	6.0	3
ARKANSAS								RIO GRANDE (Colo)	)						
Leadville		7.0	1.0		2.7	1.3	7	Bristol View		7.0	5.5		7.0	3.0	7
Twin Lakes		6.0	4.0	-	5.1	3.7	4	Alberta Park		9.0	5.0	0.5		3.4	7
Garfield	7	7.0	4.8	2.8	6.4	4.3	4	Mogote		7.0	1.1	0.3		1.3	7
								LaVeta Pass		8.0	2.8	0.1	2.4	1.8	4
ROARING FORK															
Placita		3.0	2.4		1.2	1.8	4	RIO GRANDE (N. M.	)						
Maroon	8	3.0	4.8	0.1	2.9	2.3	6	Red River		7.0	0.7	0.5		2.3	6
								Aqua Piedra		7.0	0.2	1. 1		1.7	6
ELK RIVER								Bateman		8.0		1.7		4.3	4
Hahns Peak								Chamita		8.0		1.8		2.4	4
								Fenton Hill		7.0	2.0				
DOLORES								Big Tesuque		7.0	1.3	0.7		2.9	3
Lizzard Head		. 0	5.4	6.0		5.6	2	Rio En Medio		7.0	0.5	0.5	-	2.6	3
Dolores		'. 0	2.5	3.3		2.9	2	Taos Canyon		7.0	0.4	1.4	7, 0	2.8	3
Rico	7	. 0	5.0	5.2		5.1	2								
ALL DROELLE DEL	OTTIC A	D. T. 40	181011	TIC											
ALL PROFILE DEF	THS A.	RE 48	INCH	ES											

# STATUS OF RESERVOIR STORAGE

February 1, 1960

		U	SABLE ST	ORAGE			USABLE STORAGE			
	USABLE		1000 A.			USABLE	10	00 A.F.		
RESERVOIR	CAPACITY 1,000 A.F.	1960	1959	15-yr. Avg. 1943-57	RESERVOIR	CAPACITY 1,000 A.F.	1960	1959	15-yr. Avg 1943-57	
\$	SOUTH PLATTI	E DRAINA	GE			ARKANSA	AS DRAINA	AGE		
Windsor	18.6	11.8	11.0	7.3	Twin Lakes	57.9	9.9	12.7	23.7	
Cache la Poudre	9.5	8.4	8.2	5.5	Sugar Loaf	17.4	3.0	5.5	8.0	
Fossil Creek	11.6	7.7	7.0	5.6	Clear Creek	11.4	8.0	4.8	5.7	
Terry Lake	8. 2	5.5	4.4	5.5	Meredith	41.9	0	15.6	13.4	
Halligan	6.4	3.7	4.3	1.9	Horse Creek	26.9	11.0	2.5	7.3	
Chambers Lake	8.8	3, 1	1.7	1. 7	Adobe Creek	61.6	0	29.1	22.4	
Cobb Lake	34.3	18,7	17.8	6.4	Cucharas	40.0	0.7	6.0	5.5	
Black Hollow	8.0	2.8	3.7	2.1	John Martin	366.6	12.1	244.4	58.5	
Carter	108.9	66.4	59.2	44.3*	Great Plains	150.0	55.3	103.9	44.3	
Horsetooth	143,5	84.7	77.7	79.2*	Model	15.0	2.4	3.7	2.2	
Lake Loveland	14.3	10.4	9.7	6.0	Conchas (NM)	600.0	325.1	357.7	262.9	
Bovd Lake	44.0	35,6	42.2	19.4	W. C. Austin	151.0				
Lone Tree	9.2	7.8	5.9	5.7						
Mariano	5.4	5.2	4.3	1.8		COLORAD	O DRAIN	AGE		
Union	12.7	11.4	8.6	7.0	Taylor Park	106.2	43.4	51.4	61,0	
Eleven Mile	81.9	97.8	97.8	70.7	Vallecito	126.3	37.9	45,2	42.0	
Cheesman	79.0	59.7	56.1	49.9	Groundhog	21.7	3.0	5.0	7.4	
Marston	18.9	15.6	15.1	14.3	Granby	465.5	250,5	287,3	212.9*	
Antero	33.0	15.7	15.7	14.4	Green Mountain	146.9	85.9	70.1	76.7	
Gross	43.1	24.7	18.7	*						
Barr Lake	32.2	26.8	14.2	18.2	R	O GRANDE (CO	OLO) DRA	INAGE		
Milton	24.4	13.9	15.3	9.1	Rio Grande	45.8	10.3	5.1	11.7	
Standley	18.5	13.6	7.4	7.9	Santa Maria	45.0	3.5	7.5	7.5	
Marshall	10.3	4.8	1.8	1.7	Sanchez	103.2	11.4	25.4	10.9	
Horse Creek	20,6	11.0	9.5	8.4	Terrace	17.7	6.0	2.2	2.3	
Riverside	57.5	50.4	35.9	38.6	Continental	26.7	3.7 e	st 1.7	7.1	
Empire	37.7	30.8	28.4	21.7	Platoro	60.0	4.0	34.0	4.7*	
Jackson Lake	35.4	28.1	28.3	26.8					Ī	
Prewitt	32.8	24.2	16.7	17.8	I	RIO GRANDE (N	. M. ) DRA	INAGE		
Point of Rocks	70.0	31.7	61.1	44.6	Elephant Butte	2,206.8	587.1	981.1	621.2	
Julesburg	28.2	19.4	20.5	20, 1	Caballo	344.0	88.7	180.6	137.7	
					El Vado	194.5	2.2	2.7	40.8	
					Alamogordo	122.1		123,6	54.9	
*Shorter Periods	3				McMillan-Avalor			42.3	14.6	
					Red Bluff(Tex)	307.0		0	88.5*	

# VALLEY PRECIPITATION 1/2

# Division Averages and Departures $\underline{\underline{^{3}}}/$

Arkansas River Colorado River San Juan River, N. M.	Fa	al1	W:	inter		Fall		Winter	
	Sept	OctNov. Dept.	Dec. Avg.	Dept. <u>2</u> /	DRAINAGE DIVISIONS	SeptOct. Avg.	-Nov. Dept.	Dec. Avg.	Dept. 2/
					Canadian River, N.M.	6.63	<b>∤0.02</b>	0.95	<b>∤0.40</b>
South Platte River	6,28	£1.90	0.14	-0.39	Rio Grande, Colo.	7.43	/3.70	0.73	<b>≠0.</b> 19
Arkansas River	7.33	/2.44	0.39	-0.29	Rio Grande, (N.), N.M	6.81	<i>f</i> 0.72	1.76	/0.68
Colorado River	8. 16	/2,21	1,52	<b>/0.10</b>	Rio Grande, (S), N. M.	5.52	<i>+</i> 1.32	1.27	/0.74
San Juan River, N. M.	7.27	<b>/2.</b> 52	1.65	<b>/0.80</b>	Pecos River, N.M.	5.21	-0.29	1.18	<b>/0.62</b>
1/ Preliminary analysis furnished by Meteoro Bureau					2/ Departure from aver 3/ Selected Stations	age			

#### SNOW COURSE MEASUREMENTS

February 1, 1960

ENOW COURSE				r Conte	nt	Years	CNOW COMPCE		Depth		r Conte	ent	Year
SNOW COURSE	Dat	1960 e Inches		nches 1959	Avg.	of Record	SNOW COURSE	Date	1960 Inches		Inches 1959	Avg.	of Recor
Di		ERIVER	DDAIN	ACE	,	**		V A NIC A C	DIVIDD	DD 4 IN		<u> </u>	**
PI	JAIII	KIVER	DRAIN.	AGE			AI	RKANSAS	RIVER	DRAIN	AGE		
NO. PLATTE RIV							ARKANSAS RIVER						
Cameron Pass (a)		38	9.0	14.9	13.6	21	Tennessee Pass	1/27	25	5.6	6.5	6.9	24
Park View	1/26		4.4	4.7	5.9	22	Twin Lakes T.	1/27	25	7.0	4.9	6.6	22
Columbine Lodge	1/27		9.8	14.0	15.3	24	La Veta Pass*	1/29	22	5.2	5.3	6.6	20
Willow Cr. Pass*	1/26		6.3	6.1	7.8	20	4 Mile Park	1/27	9	1.0	2.9	3.0	20
Northgate	1/28	15	2.7	4.1	4.0	10	Fremont Pass	1/28	44	9.8	8.6	10.3	24
A DANGED DIVIDE							Monarch Pass	1/29	34	7.8	8.5	10.8	19
LARAMIE RIVER				10.0			Saint Elmo (a)	1/28	29	5. 7	NS	7.7	9
Roach(a)	1/00	0.0		12.0	11.2	18	Timberline				11.9	12.3	7
Deadman Hill*(a)	1/30	22	4.5	11.1	8.8	16	East Fork	1/. 27	24	4.9	4.6		5
McIntyre		NS		NS		4	Westcliffe		NS		NS		5
OUDDD DUIDD							Bourbon		NS		4.7		2
POUDRE RIVER		0.0					Cooper Hill		NS				
Cameron Pass (a)		38	9.0	14.9	13. 6	21							
Chambers Lake	1/31	14	2.8	8. 1	5.6	21	CO	LORADO	RIVER	DRAINA	GE		
Big South	1/31	6	0.9	2.6	1.8	21							
Deadman Hill (a)	1/30	22	4.5	11. 1	8.8	16	COLORADO RIVER	(Above G	lenwood	Spring	s)		
Lake Irene*	est	45	9.6	12.0	13.6	21	Camer on Pass* (a)	est	38	9.0	14.9	13.6	21
Iour Glass Lake		NS		NS		16	Phantom Valley	1/28	22	3.9	8.2	6.6	23
Red Feather	1/27	6	1.7	5.1	5.5	11	Hoosier Pass*	1/28	35	8.1	8.4	7.2	21
Lost Lake	1/31	21	5.6	10.3	7.9	9	Berthoud Pass	1/27	36	9.0	9.3	8.8	23
							Tennessee Pass	1/27	25	5.6	6.5	6.9	23
GIG THOMPSON F							M. Fork Camp Gr.	est.	20	3.2	5.2	6.2	23
ake Irene*	est.	45	9.6	12.0	13.6	21	Fiddler Gulch	est	40	9.6	8.0	10.0	19
lidden Valley	1/29	22	6.2	7.9	7.2	19	Lulu				NS		
eer Ridge	1/29	4	0.9	4.2	3.6	11	Willow Creek P.	1/26	28	6.3	6.1	10.8	20
ongs Peak	1/30	20	5.1	7.1	7.8	9	N. Inlet Grand L.	est	22	3.2	4.1	6.1	19
wo-Mile	1/29	32	7.3	9.4		7	Lake Irene	est	45	9.6	12.0	13.6	21
							Arrow	1/25	24	5.3	6.4	6.5	21
T. VRAIN RIVER	}						Lapland	•	NS		6.0		11
Vild Basin	est.	25	6.6	8.6	9.0	22	Fremont Pass	1/28	44	9.8	8.6	10.3	24
opeland Lake	1/28	5	1, 1	3.4	4.3	11	Lynx Pass	1/26	25	4.6	NS	7.7	20
Vard	1/28	9	1.9	7.0	4.2	10	Shrine Pass	1/27	41	9.6	8.2	10.8	18
	·						Grizzly Peak	1/26	45	11.5	8.0	11.3	18
OULDER CREEK	2						Glen-Mar Ranch	1/27	17	3.0	4.4	6.1	12
Jniversity Camp	1/27	27	7.5	19.9	12.7	21	Monarch Lake	1/26	22	5.0	9.7	8.9	8
Moffat	·	Dropped		12.2	5.7	10	Granby	1/26	18	3.0	4.6	5. 1	11
Boulder Falls	1/27	18	4.1	12.4		7	Grand Lake	1/28	21	3.0	6.9	5.6	11
	,						Berthoud Summit	2/1	49	13.6	13.4	11.6	9
LEAR CREEK							Frazer View	2/1	26	5.5	6.8	7.7	9
oveland Pass	1/28	32	7.8	7.9	9.4	20	Gore Pass	1/26	21	3.5	5, 3	6.6	8
rizzly Peak*	1/26	45	11.5	8.0	11.3	18	Frisco	1/27	15	2.5	3. 9	5,5	9
mpire	2/1	20	5.2	5.4	4.4	10	Snake River	1/26	15	2.4	4.2	5.8	8
Berthoud Falls	2/1	31	6.5	9.4	9.0	9	Summit Ranch*	est	33	6.6	4.4		6
Clear Creek	1/28	42	11.5	9.4	9.8	8	Vail Pass	1/27	31	7.0	10.3		6
orear ereen	-,				., .	· ·	Pando	1/27	14	2, 4	4.6		5
OUTH PLATTE	o TWE D						Kokomo	1/28	32	6.6	NS		5
Hoosier Pass	1/28	35	8.1	8.4	7, 2	21	Milner	1/20	NS	0.0	NS		6
efferson Cr.	1, 20	NS	0. 1	NS	5.6	20	Blue River	1/28	22	2 2			
eneva Park	1/29	6	1.5	3. 0	3, 1	10	Jones Pass	1/26	34	3.3	5.9		3
eneva rark	1/20	Ü	1. 5	5.0	5, 1	10	Ranch Creek	*.		8.2	NS		3
							Vasquez Creek	1/25	17	4.2	6.5		3
							Cooper Hill*	1/27	32 NS	7.4	8.0		3
On adjacent dra	inage						ROARING FORK						
		n 15 year	s reco	rd in pe	riod 194	3-57	Ind. Pass Tunnel	1/27	37	9.1	7.3	10.6	24
* Courses with le							North Lost Trail(a)		23	5.8	5.7	9.2	18
			0,				Nast		NS				16
have all years							Itasi				142	4.4	
have all years S No Survey							Ivanhoe		145		NS 8.1	4.4 11.2	
* Courses with le have all years S No Survey a) Air observed								1/25	28	13.6	8. 1 6. 1	11.2	14 2

# SNOW COURSE MEASUREMENTS

February 1, 1960

SNOW COURSE		Depth 1960		Content iches		Years of	SNOW COURSE		Depth 1960		Content ches		Years of
	Date	Inches	1960	1959	Avg.	Record		Date	Inches	1960	1959	Avg.	Record
YAMPA RIVER							RIO GRANDE IN COI	LORADO	)				
Dry Lake (a)	1/29	40	8.2	11.6	13.2	18	Wolf Creek Pass	1/28	71	21.4	6.4	19.5	20
Columbine Lodge*		44	9.8	14.0	15.3	24	Upper Rio Grande	1/26	35	7.4	1.9	5.6	20
Elk River (a)	1/29	37	7.6	12.5	10.8	19	Santa Maria	1/27	17	3.6	1.6	4.0	21
Lynx Pass*	1/26	25	4.6	NS	7.7	19	Pool Table	· ·	NS		NS		
Rabbit Ears		NS		17.4	17.8	8	L. Humphreys		NS		NS		
Yampa View	1/26	26	6.1	8.8	9.1	8	Cochetopa Pass	1/26	18	2.9	3.4	3.5	11
Bear River		NS		NS			Red Mt. Pass	1/29	68	18.9	NS		2
Clark	1/29	24	4.9	6.1			Porcupine (a)		NS		NS		
							Wolf Creek Summit	1/28	88	27.3	6.3	15.5	9
WHITE RIVER							Hiway	1/28	73	22.7	4.9		4
Burro Mountain(a)	*.	42	9.2	11.7	10.3	24	Pass Creek	1/28	34	8.5	2.4		4
Rio Blanco	1/29	23	5.0	8.4	9.9	20							
							ALAMOSA RIVER						
PLATEAU CREEK							Silver Lakes	1/27	21	4.1	1.2	5.1	20
Mesa Lakes	1,/28	38	9.1	6.7	10.2	23	Summitville (a)	est.	76	17.1	4.8	12.5	15
Trickle Divide (a)	1/29	53	13.9	9.5	17.0	15							
							CONEJOS RIVER						
GUNNISON RIVER							River Springs		NS		NS	6.2	19
	1/25	14	2.1	4.7	9.4	24	Cumbres Pass (a)	est.	58	13.2	8.9	13.5	21
Park Cone	1/25	20	4.3	3.0	7.0	24	Platoro		NS		NS		
Alexander Lake(a)	' .	41	9.8	6.6	13.4	23	a was s s s as amo	D	(001.00				
	1/28	27	5.4	5.9	7.4	23	SANGRE DE CRISTO		•	•	- 0		
Trickle Divide (a)		53	13.9	9.5	17.0	16	LaVeta Pass	1/29	22 N.C	5.2	5.3	6.6	20
Park Reservoir(a)		48	12.7	8.0	15.6	16	Culebra		NS		NS	6.5	20
1 0 0	1/29	37	11.7	7.5	10.0	20	CHANGA DIVIED						
Lake City	1/00	NS	0.0	NS			CHAMA RIVER		E 0	12.0	0.0	10 5	0.1
•	1/26	18	2.9	3.4	3.5	11	Cumbres Pass (a)	est	58	13.2	0.9	13.5	21
McClure Pass (a)	* .	40	11.5	7.7		5	Payrole (a)	1/28	21	6.2	4.8	6.4	19
	1/29	68 N.C	18.9	NS		2	Chama Divide Chamita	$\frac{1}{28}$	26	6.3 $6.4$	0.6 1.9	3.9 7.3	20 18
Blue Mesa		NS		NS			Bateman	1/20	NS	0.4	NS	8.2	10
SAN JUAN RIVER							Bateman		110		140	0.2	10
Wolf Creek Pass*	1/28	71	21.4	6.4	19.5	20	PECOS RIVER						
	1/28	76	22.9	8.4	21.8	20	Panchuela	1/28	21	5.0	0.8	2.6	21
Wolf Creek Summi		88.	27.3	6.3	15.5	9	Big Tesuque	1/29	24	7.1	2.5	3.4	18
	1/28	21	6.3	0.6	3.9	20	Rio En Medio*	1/29	32	9.4	4.8	4.6	10
	1/28	26	6.4	1.9	7.3	18		,					
							RIO GRANDE IN NEW	V MEXIC	CO				
ANIMAS RIVER							Red River	1/29	20	4.6		5.4	19
Silverton Sub. S.		NS		NS	4.3	18	Taos Canyon	1/28	18	4.6	3.9	4.7	20
	1/28	27	5.4	5.9	7.4	23	Aspen Grove	·			NS	3.2	21
	/29	34	8.9	2.2	9.1	21	Hematite Park*	1/29	18	4.1		3.5	19
	1/29	57	17.6	6.0	16.4	9	Tres Ritos	2/2	20	5.0	2.9	3.9	21
	1/29	27	8.2		10.1	9	Payrole (a)				4.8	6.4	19
Howardville		NS		NS		6	Cordova (a)				5.7	6.8	18
Mineral Creek		NS		NS		2	Big Tesuque	1/28	24	7.1	2.5	3.4	18
	1/29	68	18.9	NS		2	Elk Cabin	1/27	17	5.3	1.4	2.6	12
							Rio En Medio	1/28	32	9.4	4.8	4.6	10
DOLORES RIVER							Quemazon	1/27	38	9.3	NS		
	1/29	23	5.6	0.5	6.2	20	Fenton Hill	1/29	19	4.5	1.1	3.2	8
Telluride	/29	19	3.6	2.8	5.1	21							
Lizard Head	1/29	39	10.3	4.8	10.2	13	CANADIAN RIVER						
Trout Lake	1/29	32	6.8	3.5	8.5	11	Hematite Park	1/29	18	4.1		3.5	19
							Tres Ritos	2/2	20	5.0	2.9	3.9	21
							Cordova (a)	4/4		0.0	5.7	6.8	18

<sup>\*</sup> On adjacent drainage

\*\* Courses with less than 15 years record in period 1943-57
have all years prior to 1957 averaged.

NS No Survey

(a) Air Observed





Federal - State - Private
COOPERATIVE SNOW SURVEYS

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